UNITED STATES PATENT AND TRADEMARK OFFICE

CERTIFICATE OF CORRECTION

PATENT NO. : 6,934,053 B1
APPLICATION NO. : 09/487586
DATED : August 23, 2005
INVENTOR(S) : Lingappa K. Mestha and S. Dianat

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

The Title Page, showing an illustrative figure, should be deleted and substitute therefor the attached title page.

Figure 1, change to the attached Figure 1;

Page 4, Figure 2, change to the attached Figure 2;

Page 5, Figure 3, change to the attached Figure 3;

Page 6, Figure 4, please delete.

Signed and Sealed this

Eighth Day of September, 2009

David J. Kappos

David J. Kappos
Director of the United States Patent and Trademark Office

(12) **United States Patent**
Mestha et al.

(10) **Patent No.: US 6,934,053 B1**
(45) **Date of Patent: Aug. 23, 2005**

(54) **METHODS FOR PRODUCING DEVICE AND ILLUMINATION INDEPENDENT COLOR REPRODUCTION**

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(73) Assignee: **Xerox Corporation**, Stamford, CT (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **09/487,586**

(22) Filed: **Jan. 19, 2000**

(51) **Int. Cl.**[7] **H04N 1/56**; H04N 1/60

(52) **U.S. Cl.** **358/1.9**; 358/504; 358/523

(58) **Field of Search** 358/1.9, 518, 504, 358/523, 501, 520, 521, 406, 530; 382/167, 312

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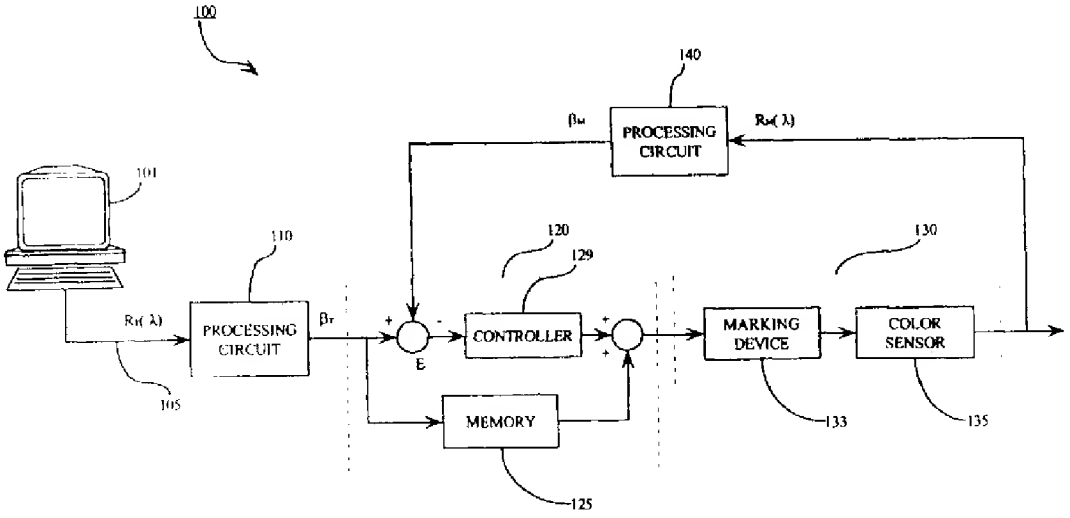
(57) **ABSTRACT**

Spectrally matched color outputs are obtained using data from a real-time sensor, such as, for example, a spectrophotometer on the output trays of a marking devices to determine the output spectra of a reproduced image. The output spectra of the reproduced image is compared with an output spectra of a target spectra stored in a computer memory to produce a mapping table that will spectrally match all subsequently reproduced color images in real-time. Thus, output color spectra are matched between displays and prints, scans and prints, scans and displays, or copies and prints.

28 Claims, 4 Drawing Sheets



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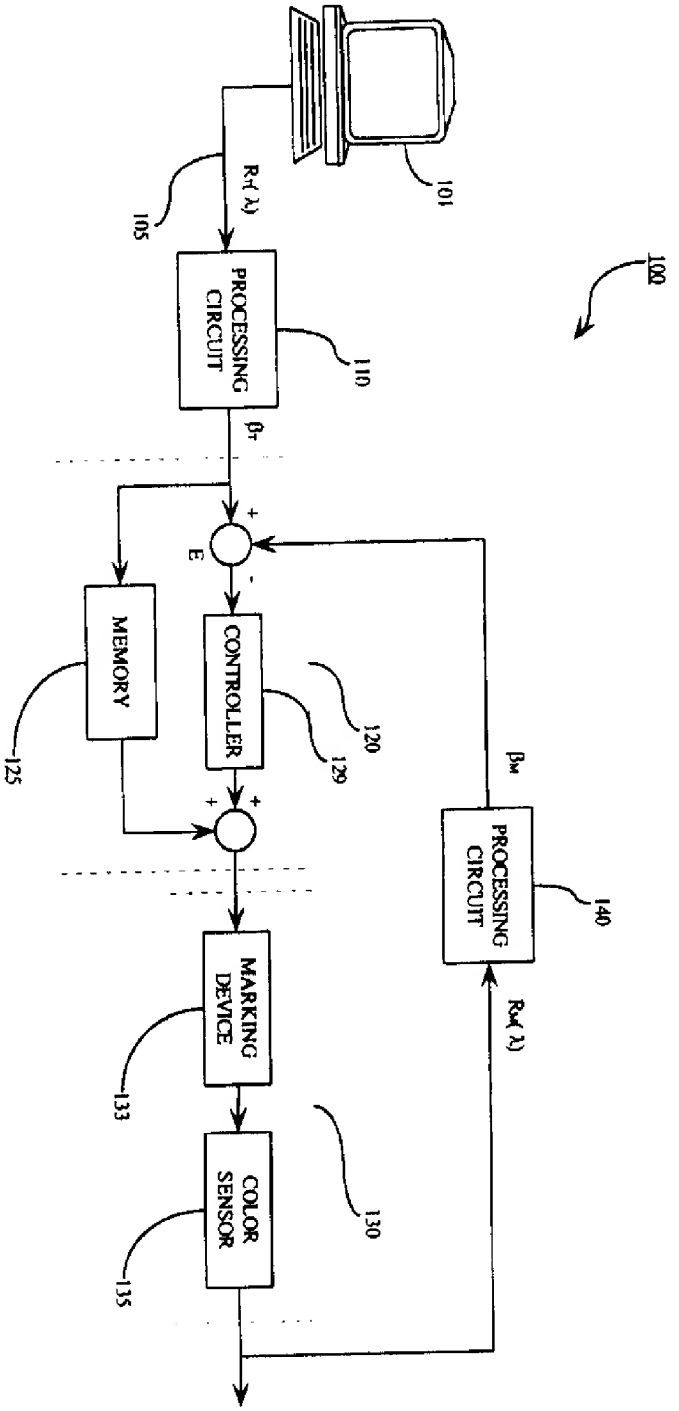
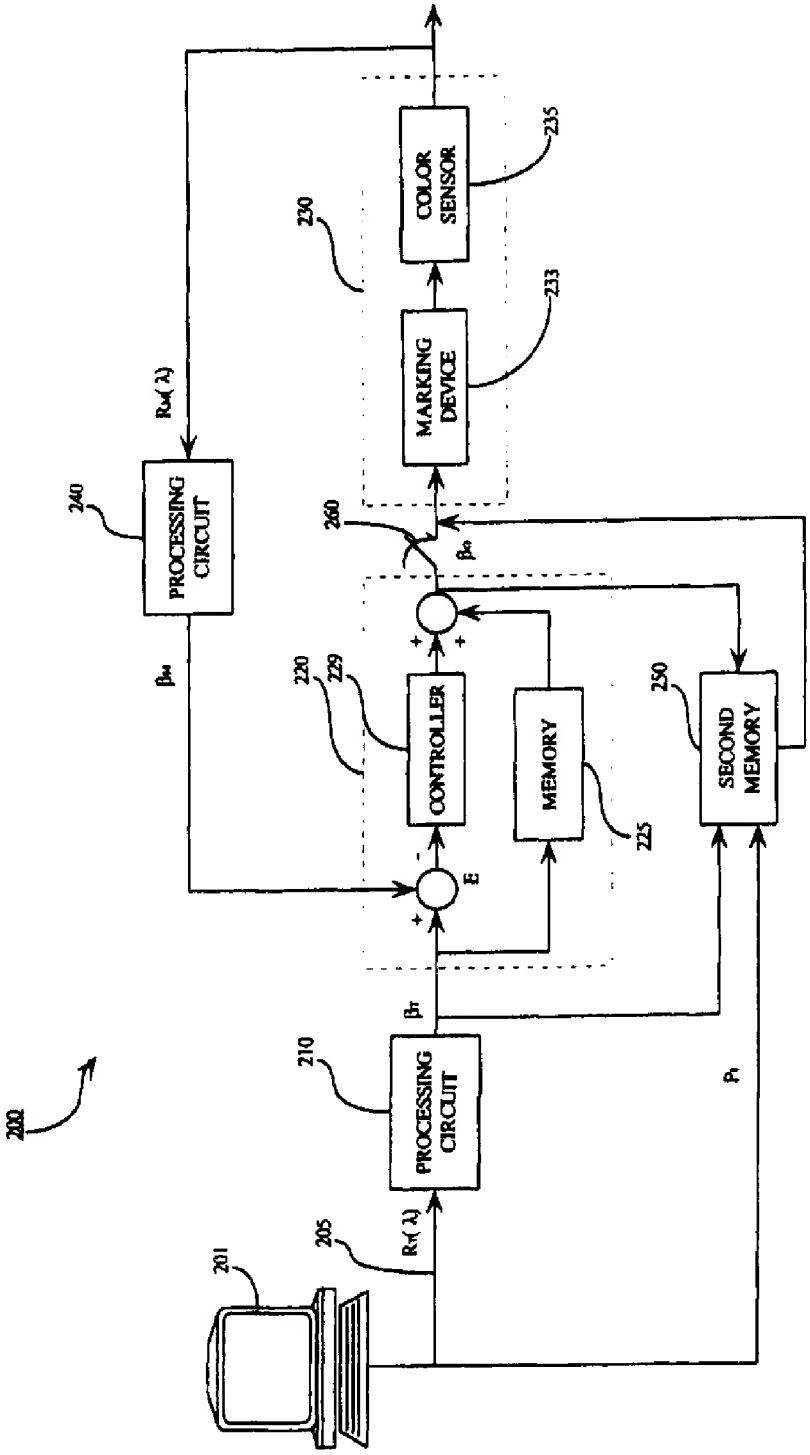


FIG.1

FIG.2


202
201
205
$R_T(\lambda)$
210
PROCESSING CIRCUIT
β_T
ρ_1
220
229
CONTROLLER
MEMORY
225
SECOND MEMORY
250
E
260
β_0
230
233
MARKING DEVICE
235
COLOR SENSOR
$R_M(\lambda)$
240
PROCESSING CIRCUIT
β_M

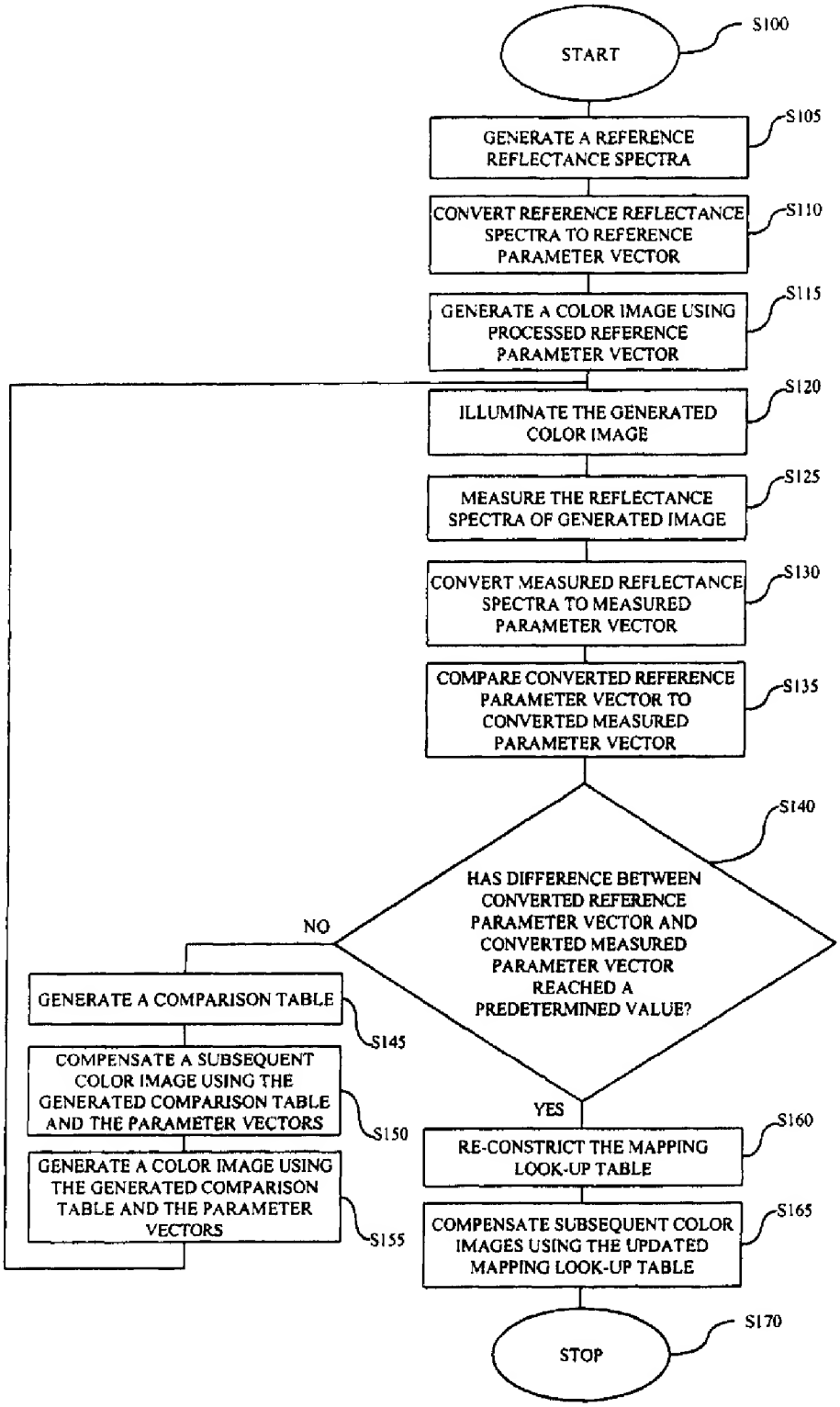

START
S100
GENERATE A REFERENCE REFLECTANCE SPECTRA
S105
CONVERT REFERENCE REFLECTANCE SPECTRA TO REFERENCE PARAMETER VECTOR
S110
GENERATE A COLOR IMAGE USING PROCESSED REFERENCE PARAMETER VECTOR
S115
ILLUMINATE THE GENERATED COLOR IMAGE
S120
MEASURE THE REFLECTANCE SPECTRA OF GENERATED IMAGE
S125
CONVERT MEASURED REFLECTANCE SPECTRA TO MEASURED PARAMETER VECTOR
S130
COMPARE CONVERTED REFERENCE PARAMETER VECTOR TO CONVERTED MEASURED PARAMETER VECTOR
S135
HAS DIFFERENCE BETWEEN CONVERTED REFERENCE PARAMETER VECTOR AND CONVERTED MEASURED PARAMETER VECTOR REACHED A PREDETERMINED VALUE?
S140
NO
YES
GENERATE A COMPARISON TABLE
S145
COMPENSATE A SUBSEQUENT COLOR IMAGE USING THE GENERATED COMPARISON TABLE AND THE PARAMETER VECTORS
S150
GENERATE A COLOR IMAGE USING THE GENERATED COMPARISON TABLE AND THE PARAMETER VECTORS
S155
RE-CONSTRICT THE MAPPING LOOK-UP TABLE
S160
COMPENSATE SUBSEQUENT COLOR IMAGES USING THE UPDATED MAPPING LOOK-UP TABLE
S165
STOP
S170

FIG. 3